

---

---

# Sepulveda Dam

— Akash Caveney, Sophia Hoang, Jordin Morley,  
Lisa Mouren-Laurens, Skyler Stonesifer, & Sam Wellsfry —

---

---

# Introduction

## Importance of Studying CSS

- ❖ Massive decline due to
  - agriculture, residential development, air pollution
- ❖ Recognition of habitat loss for protected species sparked numerous restoration efforts
- ❖ Sepulveda Wildlife Basin: North Reserve and Bull Creek



# Hypotheses



## Hypotheses

$H_1$ : We expect that there is a significant difference in the CSS in Sepulveda Dam when looking at North Reserve versus Bull Creek within the same season.

$H_0$ : We expect that there is not a significant difference in the CSS in Sepulveda Dam when looking at North Reserve versus Bull Creek within the same season

$H_1$ : We expect that there is a significant difference in the CSS in Sepulveda Dam when looking at the North Reserve between Fall and Spring seasons.

$H_0$ : We expect that there is not a significant difference in the CSS in Sepulveda Dam when looking at the North Reserve between Fall and Spring seasons.

$H_1$ : We expect that there is a significant difference in the CSS in Sepulveda Dam when looking at Bull Creek between Fall and Spring seasons.

$H_0$ : We expect that there is not a significant difference in the CSS in Sepulveda Dam when looking at Bull Creek between Fall and Spring seasons.

# Data and Methods

- ❖ Eight 20-meter transects at Bull Creek and the North Reserve
- ❖ Ninety-degree angles to the trails and the bunny trails



Mystery Grass 1:  
Identified as *Stipa cernua*



Image of our transect line and  
dead brush at North Reserve

- ❖ Our main shortcoming was encountering multiple “mystery species”
  - samples and pictures of each to wait to identify them back at the lab, which could lead to human error
- ❖ Chi squared analysis for our data analysis
  - Bull Creek in Fall 2018 and Spring 2019: *Amsinckia intermedia*, *Sisymbrium altissimum*, bare dirt, and *Hordeum murinum*.
  - North Reserve in Fall 2014/2016 and Spring 2019 *Baccharis pilularis*, bare dirt, *Hirschfeldia incana*, and *Baccharis salicifolia*.
  - Bull Creek and the North Reserve in Spring 2019 we used the variables *A. intermedia*, *H. incana*, *S. altissimum*, and *E. cicutarium*.
- ❖ Exploratory nature of this study, warrants an alpha level of 0.10 as the standard for rejecting the null hypothesis.



# Variables for Bull Creek (Spring v Fall)



*Amsinckia intermedia*  
© 2014 Vertin Alvarez



*Hordeum murinum*  
© 2010 Michael O'Brien



*Sisymbrium altissimum*  
© 2010 Jean Pawek

# Variables for the North Reserve (Spring v Fall)



*Baccharis pilularis*  
© 2019 Acacia Garden Solutions



*Hirschfeldia incana*  
© 2017 Gary McDonald



*Baccharis salicifolia*  
© 2009 Neal Kramer



# Variables for Sepulveda Dam (same season)



*Sisymbrium altissimum*  
©2010 Jean Pawek



*Erodium cicutarium*  
© 2008 Steve Matson



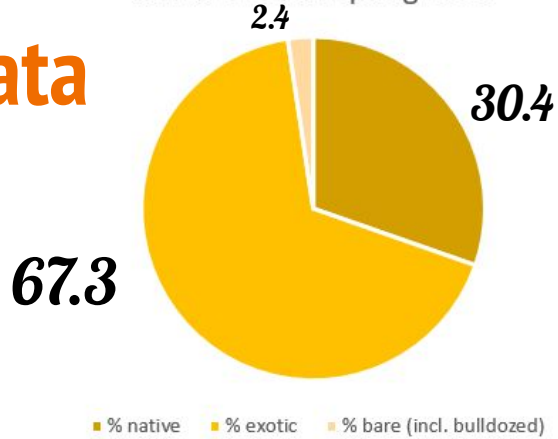
*Amsinckia intermedia*  
© 2014 Vertin Alvarez



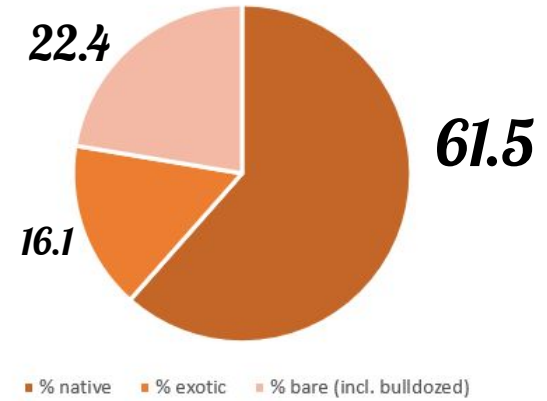
*Hirschfeldia incana*  
© 2017 Gary McDonald

# Raw Data

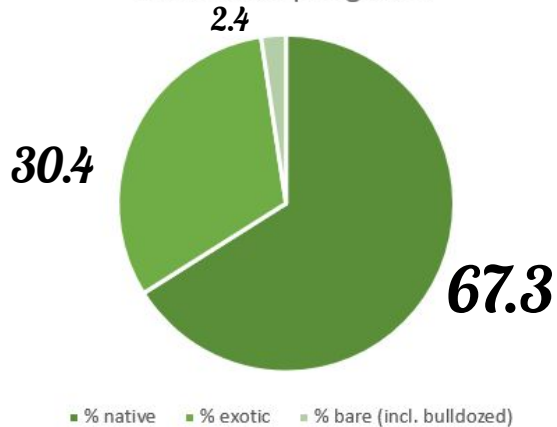
North Reserve Spring 2019



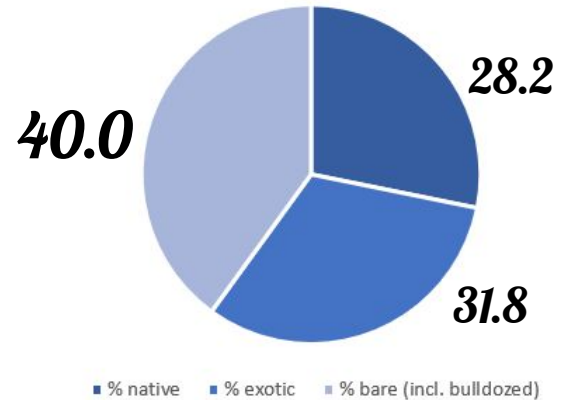
North Reserve Fall 2014 and 2016



Bull Creek Spring 2019



Bull Creek Fall 2018





# Results of Hypothesis 1

❖ Bull Creek Spring 2019 vs. North Reserve Spring 2019

	VAR 1	VAR 2		*
		a	b	
<u>A. intermedia</u>	Obs	49	0	49
	Exp	30.032	18.968	
		c	d	
<u>H. incana</u>	Obs	13	44	57
	Exp	34.935	22.065	
		e	f	
<u>S. altissimum</u>	Obs	47	14	61
	Exp	37.387	23.613	
		g	h	
<u>E. cicutarium</u>	Obs	5	14	19
	Exp	11.645	7.355	
	*	114	72	186

	$\chi^2_{calc}$	82.709
	<i>alpha</i>	0.10
	df	3
	$\chi^2_{crit}$	6.251
	prob	0.000
	k (min r or c)	2
	(effect size measure) Cramér's V	0.667
	(effect size measure) $\phi$ c or w	0.667
	Noncentrality ( $\lambda$ )	82.709
	Estimated power (1- $\beta$ )	1.000
	Corrected power (Rodrigue)	1.000

VAR 1: Bull Creek Spring 2019

VAR 2: North Reserve Spring 2019

Results of chi squared analysis

# Results of Hypothesis 2 & 3

## ❖ Bull Creek Spring 2019 vs. Bull Creek Fall 2018

	VAR 1	VAR 2		*
		a	b	
<u>A. intermedia</u>	Obs	49	0	49
	Exp	30.198	18.802	
		c	d	
<u>S. altissimum</u>	Obs	47	0	47
	Exp	28.965	18.035	
		e	f	
Bare dirt	Obs	4	44	48
	Exp	29.581	18.419	
		g	h	
<u>H. murinum</u>	Obs	6	22	28
	Exp	17.256	10.744	
	*	106	66	172

## ❖ North Reserve Spring 2019 vs. North Reserve Fall 2014/16

	VAR 1	VAR 2		*
		a	b	
<u>B. pilularis</u>	Obs	19	32	51
	Exp	21.224	29.776	
		c	d	
Bare dirt	Obs	4	32	36
	Exp	14.981	21.019	
		e	f	
<u>H. incana</u>	Obs	44	3	47
	Exp	19.559	27.441	
		g	h	
<u>B. salicifolia</u>	Obs	0	27	27
	Exp	11.236	15.764	
	*	67	94	161

VAR 1: Bull Creek Spring 2019 VAR 2: Bull Creek Fall 2018

$\chi^2_{calc}$	136.559
<b>alpha</b>	<b>0.10</b>
df	3
$\chi^2_{crit}$	6.251
<b>prob</b>	<b>0.000</b>
k (min r or c)	2
<b>(effect size measure) Cramér's V</b>	<b>0.891</b>
(effect size measure) $\phi$ c or w	0.891
Noncentrality ( $\lambda$ )	136.559
Estimated power (1- $\beta$ )	1.000
<b>Corrected power (Rodrigue)</b>	<b>1.000</b>

VAR 1: North Reserve Spring 2019 VAR 2: North Reserve Fall 2014/16

$\chi^2_{calc}$	85.741
<b>alpha</b>	<b>0.10</b>
df	3
$\chi^2_{crit}$	6.251
<b>prob</b>	<b>0.000</b>
k (min r or c)	2
<b>(effect size measure) Cramér's V</b>	<b>0.730</b>
(effect size measure) $\phi$ c or w	0.730
Noncentrality ( $\lambda$ )	85.741
Estimated power (1- $\beta$ )	1.000
<b>Corrected power (Rodrigue)</b>	<b>1.000</b>

# Discussion

- ❖ We found higher species diversity in the North Reserve compared to Bull Creek
- ❖ Bull Creek had a higher sum count of species, but the location was not as diverse as the North Reserve. This could be a result of sampling error due to the time constraints and large area we needed to cover.
- ❖ Higher counts of bare dirt in both areas during the Fall in comparison to spring season
- ❖ Explanation for less counts of bare dirt likely due to a wetter-than usual season.





# Conclusion



- ❖ We found that there was a statistically significant difference in the species diversity found within the North Reserve and Bull Creek in the Sepulveda Dam during Fall and Spring seasons.
- ❖ We also found a statistically significant difference in the species diversity found within the North Reserve and Bull Creek in the Sepulveda Dam during the same Spring season.
- ❖ Directions for further research would be to either allow for two days of data collecting, or having Sepulveda Dam split into two groups like  

---

Forestal.